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Building Financial Satisfaction

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Abstract

This paper aims to contribute further research on the conceptualization of individual financial satisfaction as a particular domain of satisfaction with life as a whole. Based on the 2003 *Survey on Living Conditions and Poverty* for Andalucía (Spain) and using a self-reported measure of welfare, ordered probit models are used to analyze the extent to which individual financial satisfaction can be solely explained by income in absolute terms, or alternatively, by taking into account the importance of relative income in its two dimensions: (1) personal aspirations as individual's adaptation to previous and future income levels (intra-individual comparisons), and (2) social comparisons as individual's concern for her peer's income (inter-personal dependency).

JEL classification: D60, I30, I31.

Key words: Financial satisfaction, income valuation, comparison income, reference group, internal norm, external norm.

1. Introduction

Money (income) by itself is hardly chosen as a source of individual utility or happiness. [1] As it happens with other things we may want in life, such as job security, status, or power, we do not want them for themselves, but rather as a mean to fulfill individuals' needs and desires to make ourselves happier. However, on the grounds of utility theory, increases in income are desirable from an individual's perspective and, in general, we assume that individuals will do their best, given a particular financial situation, to maximize their utility. For that reason, the level of satisfaction derived from a given financial situation will eventually be an important determinant of individual happiness. Hence, as argued by Diener and Biswas-Diener (2002), financial satisfaction (*FS*) can be seen as a "mediator" between income and happiness, since life satisfaction is influenced by many factors other than income, while financial satisfaction has income as a major input.

Research on financial satisfaction as a specific domain of satisfaction with life or individual happiness has been limited. While some authors (for a review see Frey and Stutzer, 2002) have largely investigated the straightforward relationship between income (and its attributes) and happiness, only few have claimed that happiness as a whole can be seen as an aggregate concept, which can be unfolded into individual satisfaction with different domains of life such as health, job and, of course, financial satisfaction (Van Praag, Fritjers, Ferrer-i-Carbonell, 2003). Therefore, the aim of this timely paper is to contribute further research on the conceptualization of individual financial satisfaction as a particular domain of satisfaction with life as a whole, providing empirical evidence to disentangle the effects of income and its attributes on this financial domain after accounting for personal heterogeneity. This is made possible with an unique dataset (*Survey on Living Conditions and Poverty* for Andalucía) that includes individual data on reported financial satisfaction, as well as income and income valuation measures. Specifically, we model individual financial satisfaction by estimating an ordered probit.

The main contributions of this paper in relation to previous work are the following. First, the simultaneous inclusion of income aspirations in people's utility

[1] Individual happiness, well-being and general satisfaction are used interchangeably to denote individual satisfaction with life. Welfare refers to the narrower concept of financial satisfaction or satisfaction with one's income.

function to capture both, their adaptation to previous and future income levels (intra-personal comparison), and their concerns for relative income (social comparisons). In doing so, different specifications are presented to systematically test for several hypotheses of the importance of income and income aspirations on individual financial satisfaction, specifically: (1) adopting the standard approach that *FS* solely depends on the reported household income; (2) assuming that individual *FS* is constructed from a bundle of income characteristics that includes not only income level, but the divergence between reported household income and individual's income needs or saving ability (income adequacy) and, as a new contribution, stability and expectations for the future; and (3) assuming that individual *FS* further depends on the distance of individual household income with respect to the central tendency measure (mean, median or mode) of her endogenous or exogenous reference group. Research work in the topic of individuals' aspirations in its two components (i.e. interdependence of preferences) is still marginalized in economics (Stutzer, 2004; Ferrer-i-Carbonell, 2002a), this current research aims to contribute further empirical evidence. Second, no studies have been found that use reported *FS* as the dependent variable as we do. Reported *FS* is measured on a 1 to 7 scale, providing a very precise measure of individual welfare. The availability of this kind of data clearly opens many possibilities in the field of satisfaction with life and its many domains. Third, the micro cross-section nature of the dataset. This type of data allows to further include a large set of control variables related to individual socio-demographic and socio-economic characteristics, which may significantly explain some of individual's financial satisfaction variance (i.e, controlling for personal heterogeneity). Fourth, the geographic nature of the dataset. While most of the empirical studies on individual satisfaction have been undertaken on highly developed countries. The use of this data available for Andalucía (Objective 1 region in the European Union) can capture different non-explored individual behavior.

The plan of the paper is as follows. In the next section we present and discuss the concept and sources of individual financial satisfaction. Section 3 describes the available data and consider the empirical specification. Section 4 reports the estimation results. Section 5 concludes.

2. Concept and sources of financial satisfaction

The relationship between income and individual happiness has been one of the most discussed subjects in the literature on subjective well-being (SWB) since the early 1970s. At that time, contributions by economists were relatively minor albeit significant (Easterlin, 1974; Van Praag, 1968, 1971; Van Praag and Kapteyn, 1973; Hagenaars, 1986). In the spirit of the economic literature then, it was assumed that satisfaction with income was synonymous with welfare or well-being. This line of research was particularly started by Van Praag (1968, 1971) and the so-called Leyden School. However, while they acknowledged the idea that income was the main dimension of life satisfaction, developing theory and applied research were built understanding that income only was a determinant of welfare. Hence, we can say that these pioneers on the economic analysis of SWB were focusing on financial satisfaction, as a narrower concept than that of general individual happiness. This reasoning makes sense since general individual happiness can be influenced by many important factors that are relatively unrelated to income, whereas financial satisfaction should have income as a major input. This pattern suggests the possibility that financial satisfaction is closer in the causal chain to general satisfaction than is income (Diener and Biswas-Diener, 2002). [2]

The measurement of individual satisfaction with income or financial satisfaction has also evolved through time. Standard economic theory employs an "objectivist" position, based on observable choices made by individuals (i.e. revealed preferences) who are led by the rational maximization process of unobserved utility (Samuelson, 1947; Mas-Colell, 1977). Nevertheless, it ignores the fact that aspects other than the achievement of tangible goods and services drive such individual observed behavior. First, preferences for processes themselves are a source of utility (procedural utility). Thus, people may appreciate features of the decision process such as autonomy, participation or self-determination beyond outcomes (Frey, Benz and Stutzer, 2003). Second, there exists certain temporal interdependence when maximizing individual utility. Individual's perception depends on one's own situation in the past; Easterlin

[2] In recent years, individual happiness has been identified as a multi-dimensional concept. Current economic research has gone further so as to investigate not only general satisfaction with life as a whole but also the different life satisfaction domains, like job (Clark and Oswald, 1994), health (Ferrer-i-Carbonell and Van Praag, 2002) and, of course, income satisfaction (Van Praag and Frijters, 1999; Ravallion and Lokshin, 2001).

(1995) calls this "habit formation", and her expectations for the future. Third, the interrelation among individuals is relevant as individual's behavior is affected by the economic situation of her peers (Veblen, 1909; Hodgson, 1988). Accordingly, a subjective approach to utility offers a more successful, psychologically and sociologically sounder way to study individual behavior and satisfaction. As an attitude, unobserved indirect utility reached for a given financial situation is a "latent variable"; however, reported individual financial satisfaction can be used as an ordinal measure of true financial satisfaction so that higher reported financial satisfaction is equivalent to higher true financial satisfaction. Thus, the principal way in which subjective welfare or individual satisfaction with income is measured is through direct questions about their level of financial satisfaction. [3] As indicated in the literature (Ferrer-i-Carbonell, 2002b), people are able to evaluate their level of welfare with regard to circumstances and comparisons to other persons, past experience and expectations of the future (Diener, 1984; Veenhoven, 1993) providing meaningful responses which are mutually comparable among individuals at least at ordinal level (Sen, 1999).

Because personal responses to financial satisfaction bear, not only on the issue of comparability and meaningfulness, but more importantly on the causes of such a welfare, it is worth revising now the literature on the conceptualization of financial satisfaction. Following Porter and Garman (1993), the determinants of welfare can be classified into three different groups,[4] namely: objective attributes (e.g. income and other personal and household type characteristics), perceived attributes (e.g. satisfaction with standard of living or with savings and investments as value-related indicators of the objective attributes) and evaluated attributes as individual's assessment of financial and non-financial characteristics when judged against standards of comparison (e.g. aspirations, expectations, etc.)

Clearly, it is logical to assert that a sense of financial happiness depends not only upon objective socio-economic and demographic variables, especially since the importance of personality and people's nature can not be neglected (Crawford *et al.*, 2002). Moreover, it is not the absolute level of income that matters most but rather how

[3] Life satisfaction questions have been posed into questionnaires for over three decades, starting with Bradburn (1969), Cantril (1965), and Likert (1932). The wording of the question and the number of the response categories may vary.

[4] In the literature on SWB, Ferrer-i-Carbonell (2002a) divides the determinants of well-being in two groups: objective variables (e.g. income and age) and subjective variables (e.g. financial satisfaction and self-reported health). The objective variables are called *external factors* of SWB, while the subjective variables are related to *internal factors* (Diener and Lucas, 1999).

individuals perceive their income as adequate to satisfy their needs, which include not only material goods but also higher aspects such as social acceptance or self-esteem (Diener, 1984). In identifying their needs, people use standards such as comparisons with the past, desires, as well as social comparisons to evaluate how well they are doing (Campbell, Converse and Rodgers, 1976; Michalos, 1985). The idea of comparison income is part of the more general aspiration level theory. In economics, the most suitable framework to understand this approach to the concept of financial satisfaction is that of interdependence of preferences in its two dimensions: First, preferences change due to comparison with own's income and expenses through the lifecycle (intra-individuals comparison). Second, relevant "others" are important when setting up preferences (interpersonal dependency).

One of the most important processes people go through is that of adjusting to past experiences. They rarely make absolute judgments, but are constantly drawing comparisons from the past of from their expectations of the future. Thus, we notice and react to deviations from aspiration levels. Additional material goods and services initially provides higher satisfaction, but it is usually only transitory. Satisfaction depends on change and disappears with continued consumption and fulfillment of aspirations. This process, or mechanism, that reduces the hedonic effects of a constant or repeated stimulus, is called adaptation. And it is this process of hedonic adaptation that makes people strive for ever higher aspirations. Adaptation level theory is well grounded in psychology (Helson, 1964; Campbell, 1981). In economics, the theories of preference change have concentrated on habit formation (Marshall, 1980; Duesenberry, 1949; Pollack, 1970). Empirical studies can be found in the work by Clark and Oswald (1998), McBride (2001) and Stutzer (2004) among others.

Further, there is little doubt that people's financial satisfaction will depend on what one achieves compared to other individuals. Veblen (1899) coined the notion of "conspicuous consumption", serving to impress other people. This nonfunctional demand includes the "bandwagon effect", namely when individuals consume a good because a large proportion of the society does it. In this case, the good serves the purpose of social belonging (Duesenberry, 1949). The reference group (relevant "others") can include all members of a society, or a subgroup of them, such as individuals living in the same neighborhood or having the same education level. There has also been some theoretical and empirical work on the choice and importance of the

reference group for individuals welfare (Falk and Knell, 2000; Ferrer-i-Carbonell, 2002a).

In addition to what has been written so far on the conceptualization of financial satisfaction, it may be important to further consider a couple of concerns that may enrich the definition, namely: individual's social capital and people's subjective social class.

The relevance of interpersonal interdependence may be shaped by individual's social capital. We understand social capital as an individual's resource built from her integration in social networks in an attempt to maximize her utility function (Bourdieu, 1985; Coleman, 1990; Herreros and De Francisco, 2001). *Trust* is one of the most studied approaches to individual´s social capital measurement (Hardin, 1993). Frequent social interactions provide such a trust, as other members' preferences become clearer reducing uncertainty. At a community level, Putnam (1993) argues that economic development is closely related to the importance of social capital since the presence of social networks increases trust, decreases transaction costs and makes information and innovation more fluent (Boix and Posner, 1996; Kenworthy, 1997; Greif, 1992).

Further, there exists additional piece of evidence in the literature on social perception involving questions about people's subjective social class that has not yet been widely discussed in happiness research studies (for details see Knell, 2000 p. 128). We understand subjective social class as a proxy for people's perception of their position in the income distribution. In doing so, we rely on the fact that in most existing studies on this topic income is one of the most important determinants of social class. For someone who is a perfectly informed, unbiased observer of his own situation the objective and subjective position in the income distribution should coincide. However, results indicate that there is a clustering around the middle income class. Further, the feeling of financial satisfaction and the perception of one's social class are not independent areas, people with low reference standards will overestimate their class and report –ceteris paribus- high levels of satisfaction, whereas individuals with high reference standards should underestimate their class and declare themselves less happy. These results may certainly offer new insights into the determinants of financial happiness.

Summarizing, although each individual is free to define financial satisfaction in her own terms, in practice the variety of things largely mentioned as determining welfare are for most people quite the same. This is not to say that the financial

satisfaction of any one individual can be directly compared with that of another, but if one is concerned with comparing the welfare of sizable groups of people, such as social classes, this similarity in feelings about the sources of welfare gives credence to such comparison.

3. Data and empirical specification

The dataset is derived from the *Survey on Living Conditions and Poverty* in Andalucía. This consists of a household survey conducted in 2003 by the Institute of Advanced Social Studies (CSIC) in Spain with funding from the Department of Social Affairs of the Andalucian Regional Government on a representative sample of approximately 6.000 households containing a total of around 21.000 individuals. The target population is all people living in Andalucía aged 18 and over, and the survey is designed to capture the well being of individuals and households. From this data a sample[5] was drawn of 5.235 individuals who were questionnaire respondent and that provided complete information.

The analysis now turns to the measurement of individual financial satisfaction and the identification of its determinants. Given that we cannot observe the indirect utility or objective welfare (OW_i) that a particular agent has reached under her surveyed conditions, we can however get a measure of her subjective financial satisfaction (FS_i). This is done by asking individuals how they feel about their current financial situation. The answer to this question takes discrete values from 1 (totally unhappy) to 7 (totally happy), and we assume that such an answer is meaningful and comparable between individuals (Clark and Oswald 1994; Clark 1997; Ferrer-i-Carbonell, 2002b) providing interesting and plausible results. Since FS is an ordered categorical variable, we estimate the usual Ordered Probit model (Greene, 1990). [6] The real axis is divided in intervals $(-\infty, m_1], ..., (m_7, \infty)$, such that the latent variable $OW \in (m_k, m_{k+1}]$ if $FS = k$.

[5] The sample is drawn using a stratified, multi-stage design using probability sampling. The principal stratification of the sample takes place by poverty levels, gender and age. Primary sampling units were selected in different ways depending upon the relevant size of municipalities combined with census units.

[6] We further assume linear dependence between the latent variable OW_i and the set of independent variables (x_i), β and ε_i, and that $\varepsilon \approx N(0,1)$

The empirical analysis aims at testing for the validity on the conceptualisation of welfare as a function of individual socio-demographic and economic characteristics, as well as other objective, perceived and evaluated attributes of the financial domain such that,

$$OW_i = \alpha_1(X_{y_i}) + \alpha_2(X_{s_i}) + \alpha_3(X_{p_i}) + \alpha_4(X_{h_i}) + \alpha_5(X_{e_i}) + \varepsilon_i \quad (1)$$

where X_{y_i} refers to the vector of income attributes, valuation and expectation variables; X_{s_i} includes subjective personal variables, while X_{p_i} is the vector which contains objective personal variables. Lastly, X_{e_i} and X_{h_i} refer to socio-economic and household composition variables.

The decision on which variables to include is ultimately based on exploratory analysis and data availability. Table 1 reports the definition of the specific variables used for this research. Further indication as to the meaningfulness of the data on financial satisfaction is the empirical regularities of these available variables to which we now turn.

Definition of regressors and Hypotheses

When searching for determinants of individual's financial satisfaction, the level of income and its attributes arise as straightforward candidates. A common assumption in economics is that reported household income (Y_i) is positively related to welfare. In cross-section analysis, the income coefficient has always been found to be non-linear, positive and significant (Easterlin, 1974, 1995, 2001). Descriptive empirical results with our data support this idea as Table 2 shows how individuals tend to be more financially satisfied the larger their income are. However, there may be other income attributes that can significantly explain a large portion of individual's financial satisfaction variance, namely: the adequacy of income with respect to expenditure and needs, income stability and financial expectations regarding the future, health status and social participation both as economic resources that are likely to maximize individual's utility and, last but not least, individual social comparisons.

Thus, it is quite likely that when individuals are asked about their level of welfare, they will not make and "absolute" judgement by solely considering their income in absolute terms. Rather, they will consider how adequate they perceive their income are to satisfy their needs, which are based on their personal consumption experience (intra-individual comparisons). Accordingly, we have constructed a variable to measure the adequacy of income to expenditure (captured as financial need or saving

capacity). We may expect people with higher financial needs (coping difficulties) to be less satisfied with their income level whereas people with saving capacity are more likely to be more satisfied with their income level since it would fulfill their needs and leave a surplus transferable to the future.

Besides income level and its adequacy, steadiness is also a desirable characteristic. The more steady income is, the more satisfied the individual may be. When assigning a level of satisfaction to a given family income, individuals are likely to value the degree of uncertainty or variability of that income. Thus, the degree of uncertainty of revenue makes people less satisfied with a given level of income. People not only value their present situation, but also their income in a more dynamic setting Steadiness should then capture a backward, as well as forward valuation. In line with this argument, people having optimistic foresights for the future should be more satisfied with their current household income. Dummy variables have been introduced to control both for the level of steadiness and the agreement or disagreement with the question if there shall be better opportunities in the future and for their children.

A dummy variable indicating the health status of the individual is also introduced in our analysis in an attempt to bring further light about the possible association between health status and financial satisfaction (Stutzer, 2004). We can work out a twofold explanation in terms of expectations: it may be that people in bad health status preview both less labor income due to smaller working (and thus, productive) capacity as well as higher financial needs to face medical and care expenditures. Equally, a dummy variable to control for the level of social participation is entered to test whether this major social interaction has a positive impact on individual financial satisfaction since there is a large association between social engagement and reported happiness (Donovan, Halpern and Sargeant, 2002) which supports the notion that there might be positive externalities from higher levels of social capital (Putnam, 2001; Helliwell, 2001).

Lastly, variables capturing information on the reference group (relevant "others") have also been included. As already indicated, people make social comparisons that drive their positional concerns for income (interpersonal dependency). Thus, two sets of potentially relevant variables are introduced in our analysis. First, we objectively impose a reference group, and assume that personal financial satisfaction is influenced by standards of income and expenditure of the "closest others". We believe that the individual evaluates the relative position of her household income with respect

of some central measure (mean, median or mode) and hope that richer individuals impose a negative externality on poor; and not vice versa (Duesenberry, 1949). Simultaneously, it may happen that individuals consider a reference group absolutely "out of our control" (e.g. soap opera family). This relative perceived position with an endogenous reference group is captured by entering variables for reported subjective social class (allowing to control for further personal heterogeneity). The higher they perceived they are in the social raking the more financially satisfied they should be.

Ultimately, the conceptualization of individual financial satisfaction may also be dependent upon a number of socio-demographic and socio-economic characteristics. Thus, individual's age is one of the factors affecting welfare. There is empirical evidence suggesting a u-shape behavior of this regressor with no general significant trend on the effect of gender (Van Praag, Frijters and Ferrer-I-Carbonell, 2003). Further, though larger family size has been associated with less satisfaction (Ware, *et al.* 1978), several studies have found greater financial satisfaction to be associated with the number of children in the household and not so much with the number of adults (Ferrer-i-Carbonell, 2002a). The presence of family responsibilities/ties is likely to decrease the level of financial satisfaction.

Individual's socio-economic variables are represented with dummies for education attainment and occupation. Potentially both education and occupation would shape the financial satisfaction of an agent taking into account social aspirations and a valuation of household earned income. Table 3 details the definitions of all the explanatory variables used in the regressions and reports their means and standard errors.

Empirical Specifications

Three different specifications are presented. The simplest one includes, next to individual socio-demographic and socio-economic variables, reported household income as the main determinant of *FS*. This will be the first specification (I) presented in the empirical analysis. As the utility or individual *FS* is believed to be concave in income, we introduce the variable in its logarithmic form,

$$OW_i = \beta_1 \ln y_i + \beta_2 age_i + \beta_3 age_i^2 + \beta_4 adult_i + \beta_5 children_i + \beta_{6k} hhold_{ik} + \\ + \beta_{7j} educ_{ij} + \beta_{8m} occup_{im} + \varepsilon_i \qquad (2)$$

A second specification (II) will add a bundle of income characteristics to the first specification including income adequacy as a set of dummy variables constructed as the difference between reported household income and level of savings or necessary income as follows:

If *income* > *savings* then

$adeq_n$ = *saving-income* (saving capacity)

If no saving, *income* < *necessary income* then

$adeq_n$ = *nec. inc. -income* (financial need) (3)

This construction enriches Stutzer's income aspiration analysis (2004) in a couple of ways: First, it hypothesizes that income adequacy (internal income comparison) is not symmetric and, second it implies that the effect on *FS* may be different depending on how big your saving capacity and/or financial need is (i.e. we define up to 9 different levels of discrepancy between individual income and savings or necessary income; n=9). This specification also includes a set of dummies for income stability and expectations for the future, as well as health status and social participation all of them considered as income attributes desirable for explaining individual financial satisfaction (intra-individual characteristics).

$$OW_i = \beta_1 \ln y_i + \beta_{2n} adeq_{in} + \beta_{3p} steady_{ip} + \beta_4 short_i + \beta_5 long_i + \beta_{6q} health_{iq} + \beta_7 p_i + \\ + \beta_8 age_i + \beta_9 age_i^2 + \beta_{10} adult_i + \beta_{11} children_i + \\ + \beta_{12k} hhold_{ik} + \beta_{13j} educ_{ij} + \beta_{14m} occup_{im} + \varepsilon_i \quad (4)$$

So far, no studies (to our knowledge) have simultaneously included intra-individual and inter-personal comparisons in the regression. Therefore, a third specification assumes that *FS* further depends on the position of the individual with respect to a reference group. The is done twofold: First, we include the difference between the logarithm of the individual household income and the logarithm of either the median, mean or modal income of the reference group, i.e. $\ln(y) - \ln(y_g)$. Thus, we can test which central tendency measure individuals look at when comparing themselves to others. Second, we also include a set of five dummy variables for reported subjective social class. We expect to capture people's perception of their position in the income distribution, with individuals reporting higher levels of *FS* the richer they find themselves and vice versa.

Further, based on the hypothesis that income comparisons are not symmetric (see, Duesenberry, 1949; Hollander, 2001, Ferrer-I-Carbonell, 2002a) in the sense that poorer individuals are negatively influenced by the income of their richer peers while the opposite is not true, we make a step forward and test to what extent an "excess of poverty" or "excess of richness" with the central tendency of a particular reference group really cause a negative externality of poor people. This is arbitrarily done creating the variables as follows: For each reference group we calculate its central tendency measure –***ctm*** (mean, median and mode) and then up to four different new variables are created such that:

$$\text{If} \quad y > y_g \quad \text{then} \quad \begin{cases} richer = \ln(y) - \ln(y_g) \\ poorer = 0 \end{cases} \quad \begin{array}{l} \text{further we divide } richer \text{ in 2} \\ \text{groups with equal number of} \\ \text{observations (50\% and 50\%)} \\ \text{such that} \end{array} \quad \begin{cases} veryrich = \ln(y) - \ln(y_g) & \text{the larger the difference to "ctm"} \\ veryrich = 0 & \text{otherwise} \\ rich = \ln(y) - \ln(y_g) & \text{the shorter the difference to "ctm"} \\ rich = 0 & \text{otherwise} \end{cases}$$

$$\text{If} \quad y < y_g \quad \text{then} \quad \begin{cases} poorer = \ln(y_g) - \ln(y) \\ richer = 0 \end{cases} \quad \begin{array}{l} \text{equally we divide } poorer \text{ in 2} \\ \text{groups with equal number of} \\ \text{observations (50\% and 50\%)} \\ \text{such that} \end{array} \quad \begin{cases} verypoor = \ln(y_g) - \ln(y) & \text{the larger the difference to "ctm"} \\ verypoor = 0 & \text{otherwise} \\ poor = \ln(y_g) - \ln(y) & \text{the shorter the difference to "ctm"} \\ poor = 0 & \text{otherwise} \end{cases} \tag{5}$$

Thus, we can test somehow how much distance from her peers significantly produces financial stress on the individual. [7]

This third specification stays as follows:

$$\begin{aligned} OW_i = {} & b_1 \ln y_i + b_{2n} adeq_{in} + b_{3p} steady_{ip} + b_4 short_i + b_5 long_i + b_{6q} health_{iq} + b_7 p_i + \\ & + b_8 age_i + b_9 age_i^2 + b_{10} adult_i + b_{11} children_i + b_{12k} hhold_{ik} + b_{13j} educ_{ij} + b_{14m} occup_{im} + \\ & b_{15} veryrich_i + b_{16} rich_i + b_{17} poor_i + b_{18} verypoor_i + b_{19s} def_{is} + e_i \end{aligned} \tag{6}$$

An obvious next, and final question is how to define the "objective" exogenous reference group, i.e. who belongs to the reference group of each individual. The literature provides different approaches. Thus, while Easterlin (1995) implicitly assumes that individuals compare themselves with all the other citizens of the same country, McBride (2001) includes in the reference group of each individual all people in USA who are in the age range of 5 years younger and 5 years older, and Ferrer-i-Carbonell (2002a) define the reference group according to education level, age, and region. We have undertaken exploratory analysis to disentangle, which is the relevant exogenous

[7] When considering the mode as the "***ctm"***, the difference between the individual household income and the mode is zero. We have include this individuals in the *richer* category as we assume modal individuals should be considered closer to richer individuals than to poorer.

reference group that drives comparisons in our population following both a socio-geographic and cohort approach, resulting in two different reference groups. Thus the geographic reference group combines province with habitat. We have 8 provinces in Andalucía (*Almería, Granada, Jaén, Córdoba, Sevilla, Huelva, Cádiz and Málaga*) which have been combined with 7 different types of habitat, i.e. *age rural areas, highly developed urban areas, young developed rural areas, young underdeveloped rural areas, low level urban areas and medium level urban areas*. This procedure generates 56 different reference groups. In parallel, we have defined a socio-economic cohort reference group combining age groups with education level. Education is divided into 4 categories, i.e. *no schooling, primary schooling, secondary schooling, university studies* while 5 are the age brackets considered: *younger than 25, 25-34, 35-44, 45-65,* and *66 or older* producing 20 different reference groups.

4. Estimation and Results

The next stage of the analysis examines the factors that affect individual financial satisfaction under Equation (1) framework, accommodating for the three different specifications presented in previous Section using ordered probit estimations. The pseudo-R^2 for all regressions are between 0.087 and 0.138 which is in line with the belief that only about 8 to 20% of individual satisfaction depend on objective variables and thus can be explained (Kahneman *et al.*, 1999). [8]

The empirical analysis starts with the simplest specification in which individual reported financial satisfaction is regressed on a number of socio-demographic and socio-economic characteristics, as well as individual household income. Results are presented in Table 4 (p-values reported in column 2). In line with previous empirical findings, the relationship between age and financial satisfaction seems to be u-shaped. No significant differences on financial satisfaction (*ceteris paribus*) have been found by

[8] The effects of the sampling design used by our survey data and in particular, the clustering, stratification and unequal selection probabilities, means that for analysis it cannot be assumed that the sample is drawn from independent and identical distributions. If the assumption of a randomly drawn sample were valid, estimation of equations (2), (4) and (6) could use the standard maximum likelihood estimator for the ordered probit model. However, the complex sample design means that these equations must be estimated using a pseudo–maximum likelihood estimator otherwise the Type I error rates would be substantially above their nominal level α. While the estimates of the parameters β generated are therefore not efficient, they are consistent and the estimator of the associated covariance matrix is robust (Eltinge and Sribney 1997).

gender. The results for household size (number of adults and children living in the house) and household type incorporate the fact that household income has to be shared among household members. However, household size also captures the fact that people probably live with others in close and supportive relationships. In line with this idea, we find that both number of adults and number of children have a negative impact on financial satisfaction for a given household income level, but only the effect of the number of adults is significant. It may be the case that those additional adults are not contributing any income to the household. This explanation is particularly adequate in a society such as Andalucía where the unemployment rate is substantially high (17.39% in the second trimester 2004). Moreover, couples with no children are financially more satisfied than monoparental families ($F > 95$ percent), nuclear families ($F > 90$ percent) and other household types ($F > 90$ percent). Only people with secondary education level are significantly more satisfied with their income compared to individual with not studies. Lastly, lower financial satisfaction scores are reported by retired and unemployed people (compared to employed people). Such evidence for unemployed individuals supports the idea that unemployment reduces satisfaction with life overall (Van Praag and Ferrer-i-Carbonell, 2001), and also that many unemployed people are willing to get a job independent of their current income level.

Household income is significant and positively correlated with individual financial satisfaction, which is in accordance with the usual findings that richer individuals are, *ceteris paribus*, happier than their poorer counterparts. However, to fully understand the importance of household income for individual financial satisfaction, it is desirable to include other household income attributes to put results in perspective. Thus, people are likely to value the level of income but its adequacy, variability and/or uncertainty. Table 5 presents the results for specification two, in which next to household income the importance for individual financial satisfaction of other financial attributes are tested, namely: the adequacy of income with respect to expenditure and needs, income stability, expectations regarding the future, health status and social participation. Although control variables have also been included, the discussion hereafter will focus on the income attributes' coefficients. The results show that people with higher financial needs (coping difficulties) are significantly less satisfied with their income level compared to the basic category which is those people who spend approximately all their monthly income. This is a non-monotonic relationship providing evidence that the more you need to make ends meet, the less

satisfied you are with your current level of income. Similarly, individual financial satisfaction is concave on savings capacity, reflecting the fact that what increases financial satisfaction is more the fact of being able to save and not so much the amount that the household is able to save. Furthermore, lower financial satisfaction is associated with higher degree of uncertainty of revenue, bad health and pessimistic foresights for the future. Interestingly, people take the future into account but at a decreasing rate, we observe the degree of financial satisfaction to be lower in the long run capturing the time discount rate operating among individual. Lastly, higher social involvement (participation) provides, as expected, higher level of individual financial satisfaction.

In our last specification we further include the difference between own household income and the reference income, and individual reported subjective social class so as to test for the importance of social comparisons on individual financial satisfaction (results are reported on Table 6). As indicated earlier, we have undertaken some exploratory analysis in an attempt to control for alternative exogenous reference groups, and to find out how the reference income is built, namely: using the mean, mode or median of the reference group. We hypothesize the it will depend on how well the know the characteristics of the reference group they will take a different central tendency measure ("mode" if they don't know much about the reference group but it is visible enough so as to have an idea of what everybody has; "mean" if they have a better knowledge of their peers; and "media" if they know their peers and they are evenly distributed). Results indicate that the reference income is mainly calculated using either the mean or the mode for each of the two reference groups. For the first reference group (***Age+Education***), and looking the "mean" reference income, which is the best fit for this model and reference group, the comparison income effect is asymmetric. Concretely, the coefficients for *rich* and *very rich* are non-significant and smaller than the coefficients for *poor* and *very poor*. The coefficients of the variables *poor* ($\hat{b} = 1.469$; p-value=0.028) and *very poor* ($\hat{b} = 0.513$; p-value=0.084) are significant, indicating that as postulated by Duesenberry (1949) rich people impose a negative externality on their poor counterparts, but at a decreasing rate, consistent with the idea of low-income group's conformism stated by Frank (1985). For the "***Social Group+Province"*** reference group, the "modal" reference income model is the best fit. Since this is a more geographic reference group, it is intuitive to think that people compare themselves with what they see in other individuals in the neighbourhood and this justifies the "modal"

reference income. Results indicate that although the coefficients for *rich* and *poor* are not significant, when distances from the "modal" reference income become more evident, *very rich* people are significantly more satisfied and the opposite applies to very *poor people*. Finally, as hypothesized, individuals report significantly higher levels of *FS* the richer they find themselves with respect to an endogenous "unknown" reference group and vice versa.

5. Conclusions

This paper has explored individual's financial satisfaction in Andalucía so as to analyze the extent to which *FS* variance can be solely explained by income in absolute terms, or alternatively, by taking into account the importance of relative income in its two dimensions: (1) personal aspirations as individual's adaptation to previous and future income levels, and (2) social comparisons as individual's concern for her peers' income. Based on the model of utility theory, and taking responses to a financial satisfaction question as a measure of individual welfare we have estimated a model of financial satisfaction using the *Survey on Living Conditions and Poverty in Andalucía* .

Overall, results suggest that the simultaneous inclusion of income aspirations in people's utility function to capture both, their adaptation to previous and future income levels (intra-personal comparison), and their concerns for relative income (social comparisons) certainly enriches the complex *FS* concept (pseudo-R^2 goes up from 0.08 to 0.14). The main conclusions can be summarized as follows: (1) individuals evaluate their financial situation, taking into account not only their level of income but simultaneously assessing how adequate and stable that income is to satisfy their needs; (2) Health status and social participation are individual economic assets which are also important determinants of *FS*; (3) While short and long term expectations are significant determinants of *FS*, their importance decreases with time suggesting that a discount rate is operating in our agents; (4) It is important to consider alternative central tendency measures when looking at the reference income of individuals' peers. (5) In a cohort reference group (***Education+Age***) poorer individual's *FS* is negatively influenced by the fact that their income is lower than the one of their reference group, while richer individuals do not get happier from having an income above the mean reference income. However, this degree of financial dissatisfaction is not so acute in the poorest suggesting that at that level conformity applies. (6) In the socio-geographic reference

group (***Social Group+Province***) "modal" reference income is the best fit for the model implying the importance for individuals of what is visible in their neighborhood.

We believe this piece of research significantly contributes the small empirical literature on financial satisfaction as it helps us understand the complex construction of individual *FS* and preferences and provides strong arguments to believe that *FS* is just a specific domain of satisfaction with life. It is clear that this model/approach could certainly be used to study other different domains of life satisfaction, i.e. job, health, etc. This is left for future research.

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Table 1: Definition of variables

		Specifications[1]		
Variables	*Label*	**I**	**II**	**III**
X_{y_i} **= vector of income attributes, valuation and expectations vars.**				
$\ln y_i$	reported (imputed) household income - transformed in logarithmic scale	*	*	*
$adeq_i$	household savings capacity / financial need		*	*
$steady_i$	household income steadiness		*	*
$short_i$	short term expectations		*	*
$long_i$	long run expectations		*	*
$health_i$	reported individual health status		*	*
p_i	social interaction / participation		*	*
$ydif_i$	distance to the reference group central income - transformed in logaritmic scale			*
X_{s_i} = **vector of subjective personal variables**				
def_i **:**	reported definition of family (perceived status)			*
X_{p_i} = **vector of objective personal variables**				
age_i	age	*	*	*
sex_i	sex	*	*	*
X_{h_i} = **vector of household composition variables**				
$adult_i$	number of adults in the household	*	*	*
$children_i$	number of children in the household	*	*	*
$hhold_i$	household type	*	*	*
X_{e_i} = **vector of socio-economic variables**				
edu_i	education level	*	*	*
$working_i$	occupation status	*	*	*

[1] Asteriscs indicate the specification in which variables enter the empirical analysis.

Table 2
Frequencies and counts of measures of financial satisfaction and imputed household income

	Very unhappy					Very happy		Total
Percentiles	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
1st	12.18	15.13	33.43	14.73	15.18	7.12	2.23	100.0
	(159)	(185)	(262)	(114)	(71)	(47)	(12)	(850)
2nd	9.2	14.27	40.49	11.28	10.23	13.8	0.74	100.0
	(93)	(164)	(283)	(139)	(100)	(76)	(8)	(863)
3rd	7.23	13.16	29.3	20.02	17.14	11.99	1.17	100.0
	(102)	(166)	(2599	(149)	(123)	(72)	(13)	(884)
4rth	4.54	10.36	23.46	15.8	27.27	14.45	4.11	100.0
	(49)	(82)	(195)	(118)	(130)	(82)	(13)	(669)
5th	4.07	9.55	23.73	16.58	26.42	16.69	2.96	100.0)
	(47)	(73)	(136)	(92)	(113)	(78)	(13)	(552)
6th	4.69	6.98	20.65	13.92	24.38	24.67	4.72	100.0
	(23)	(36)	(89)	(51)	(89)	(73)	(23)	(384)
7th	2.16	10.55	18.7	14.76	22.4	25.34	6.08	100.0
	(19)	(29)	(76)	(50)	(77)	(77)	(27)	(355)
8th	1.59	5.94	15.9	16.37	33.5	20.82	5.89	100.0
	(8)	(21)	(42)	(33)	(81)	(57)	(17)	(259)
9th	0.63	4.18	10.36	11.33	23.71	36.43	13.36	100.0
	(3)	(11)	(29)	(25)	(53)	(67)	(19)	(207)
10th	0.86	2.48	8.26	4.07	17.94	44.87	21.53	100.0
	(2)	(7)	(21)	(16)	(43)	(79)	(44)	(212)
TOTAL	5.22	9.88	23.65	14.37	21.48	19.92	5.47	100.0
	(505)	(774)	(1392)	(787)	(880)	(708)	(189)	(5235)

Pearson Uncorrected chi2(54) = 1141.93 (p-value= 0.0000)

Note: Counts are in brackets

Table 3: Sample Statistics

Variables	%	Std. errors
Subjective Financial Satisfaction		
Very much satisfied	0.0547	0.0066
Much satisfied	0.1991	0.0163
Satisfied	0.2147	0.0126
Not satisfied not unsatisfied	0.1436	0.0111
Unsatisfied	0.2366	0.0148
Much unsatisfied	0.0987	0.0075
Very much unsatisfied	0.0522	0.0050
Income and Expectation Variables		
Income (imputed monthly household income)	1158.94	35.935
Adeq1 – Save > 500 €/month	0.0266	0.0046
Adeq2 – Save 500-241 €/month	0.0492	0.0069
Adeq3 – Save 240-121 €/month	0.0799	0.0076
Adeq4 – Save 120-61 €/month	0.0936	0.0085
Adeq5 – Save < 60 €/month & need < 60 €/month	0.0744	0.0072
Adeq6 – Need 61-120 €/month	0.0432	0.0060
Adeq7 – Need 121-240 €/month	0.1638	0.0140
Adeq8 – Need 241-500 €/month	0.2622	0.0148
Adeq9 – Need > 500 €/month	0.2066	0.0130
Steady 1 – Steady Income	0.5778	0.0159
Steady 2 – Some steady Income	0.2471	0.0120
Steady 3 – Little steady Income	0.1282	0.0080
Steady 4 – No steady Income	0.0439	0.0046
Short1 – Good opportunities for today	0.3583	0.0181
Short2 – Not so good opportunities for today	0.5511	0.0181
Long1 – Good opportunities for our children	0.5391	0.0190
Long2 – Not so good opportunities for children	0.2884	0.0171
Health1 – Good Health	0.7448	0.0137
Health2 – Regular Health	0.1687	0.0087
Health3 – Bad Health	0.0849	0.0117
Social Capital		
p – It is socially involved	0.5473	0.0217
Subjective Social Class		
Def1 – Very Poor	0.0112	0.0017
Def2 – Poor	0.1285	0.0126
Def3 – No poor/no rich	0.6319	0.0160
Def4 – Comfortable	0.2000	0.0172
Def5 – Prosper	0.0260	0.0044
Socio-demographic Characteristics		
Age	48.551	0.4150
Male	0.4673	0.0100
Adult – # adult living in the house	2.4561	0.0356
Children – # children living in the house	0.4314	0.0198
Hhold1 – Living alone	0.2013	0.0141
Hhold2 – Living with couple	0.2020	0.0107
Hhold3 – Nuclear family	0.4289	0.0138
Hhold4 – Lone parents	0.0593	0.0055
Hhold5 – Other household types	0.1082	0.0079
Socio-economic Characteristics		
Educ1 – No schooling	0.3468	0.0172
Educ2 – primary schooling	0.3192	0.0142
Educ3 – secondary education	0.1974	0.0123

Educ4 – university level	0.1261	0.0138
Occup1 – Working	0.3237	0.0132
Occup2 – Unemployed	0.0517	0.0039
Occup3 – Student	0.0298	0.0036
Occup4 – Retired	0.2384	0.0135
Occup5 – Housewife	0.3362	0.0165

Table 4
Ordered probit regression: individual's financial satisfaction
Absolute Income: The ultimate source of financial satisfaction

Variables	$\hat{b}$	**p-value**
Income (ln *y*)	1.0585	0.000
Socio-demographic Characteristics		
Age	-0.0259	0.008
Age squared	0.0003	0.001
male	-0.0664	0.450
# adult living in the house	-0.1966	0.000
# children living in the house	-0.0895	0.017
Living alone	0.0810	0.481
Nuclear family	-0.1365	0.091
Lone parents	-0.3433	0.000
Other household types	-0.2484	0.073
Socio-economic Characteristics		
primary schooling	0.0964	0.148
secondary education	0.1554	0.053
university level	0.1112	0.407
Unemployed	-0.5634	0.000
Student	0.0572	0.653
Retired	-0.2389	0.053
Housewife	-0.1501	0.169
$\hat{g}_1$	4.3356	0.000
$\hat{g}_2$	5.0359	0.000
$\hat{g}_3$	5.9047	0.000
$\hat{g}_4$	6.3414	0.000
$\hat{g}_5$	7.0412	0.000
$\hat{g}_6$	8.1364	0.000
Sample size (N)	5235	
Log pseudo-likelihood	-8667.22	
Pseudo-R^2	0.087	

Omitted categories: **female, living with couple, no education, working.**

Table 5
Ordered probit regression: individual's financial satisfaction
Relative Income I: Internal norms shape aspirations

Variables	$\hat{b}$	p-value
Income and Expectation Variables		
Income (lnY)	0.7225	0.000
Save > 500 €/month	0.4896	0.004
Save 500-241 €/month	0.1710	0.623
Save 240-121 €/month	0.4580	0.000
Save 120-61 €/month	0.2951	0.010
Need 61-120 €/month	-0.3385	0.016
Need 121-240 €/month	-0.2831	0.006
Need 241-500 €/month	-0.4091	0.000
Need > 500 €/month	-0.3492	0.007
Steady 1	0.4742	0.013
Steady 2	0.3195	0.083
Steady 3	0.1724	0.342
Short1	0.2903	0.000
Long1	0.1083	0.068
Good Health	0.2542	0.015
Bad Health	-0.3171	0.001
It is socially involved	0.1745	0.000
Socio-demographic Characteristics		
Age	-0.0184	0.086
Age squared	0.0002	0.017
male	-0.1527	0.062
# adult living in the house	-0.1302	0.001
# children living in the house	-0.0524	0.157
Living alone	0.0115	0.902
Nuclear family	-0.0773	0.404
Lone parents	-0.3161	0.002
Other household types	-0.1482	0.338
Socio-economic Characteristics		
primary schooling	0.0074	0.991
secondary education	0.0136	0.863
university level	-0.0887	0.406
Unemployed	-0.4647	0.000
Student	0.0846	0.507
Retired	-0.1361	0.231
Housewife	-0.1527	0.126
$\hat{g}_1$	2.8450	0.000
$\hat{g}_2$	3.5833	0.000
$\hat{g}_3$	4.5126	0.000
$\hat{g}_4$	4.9926	0.000
$\hat{g}_5$	5.7682	0.000
$\hat{g}_6$	6.9609	0.000
Sample size (N)	5235	
Log pseudo-likelihood	-8275.1781	
Pseudo-R^2	0.1283	

Omitted categories**;save < 60 €/month but need < 60 €/month, steady 4, short2, long2, regular health status, female, living with couple, no education, working.**

Table 6

Ordered probit regression: individual's financial satisfaction

Relative Income II: Internal and external norms both shape aspirations

	Age + Education		Social Group + Province	
Variables	$\hat{b}$	**p-value**	$\hat{b}$	**p-value**
Income Group (Median)				
Very Rich	0.0957	0.813	0.2787	0.149
Rich	0.3792	0.391	0.6447	0.188
Poor	0.5560	0.459	-0.1466	0.694
Very Poor	0.2329	0.420	-0.0321	0.861
Subjective Social Class				
Very Poor	-0.9967	0.000	-1.0452	0.000
Poor	-0.3599	0.000	-0.3763	0.000
Comfortable	0.2057	0.029	0.1891	0.046
Prosper	0.5788	0.001	0.5569	0.001
Log pseudo-likelihood	-8205.153		-8202.227	
Pseudo-R^2	0.1357		0.1360	
Income Group (Mean)				
Very Rich	0.0469	0.909	0.1392	0.514
Rich	0.2787	0.958	0.7013	0.216
Poor	1.4691	0.028	0.1730	0.584
Very Poor	0.5134	0.084	-0.0365	0.851
Subjective Social Class				
Very Poor	-0.9794	0.000	-1.0391	0.000
Poor	-0.3667	0.000	-0.3801	0.000
Comfortable	0.2124	0.020	0.1856	0.059
Prosper	0.5922	0.000	0.5695	0.000
Log pseudo-likelihood	-8181.302		-8200.546	
Pseudo-R^2	0.1382		0.1362	
Income Group (Mode)				
Very Rich	0.2056	0.199	0.1665	0.033
Rich	0.2653	0.186	-0.0804	0.832
Poor	0.1212	0.788	0.3330	0.135
Very Poor	0.3122	0.032	0.1788	0.058
Subjective Social Class				
Very Poor	-0.9849	0.000	-1.0144	0.000
Poor	-0.3506	0.000	-0.3715	0.000
Comfortable	0.1960	0.034	0.1989	0.034
Prosper	0.5759	0.001	0.5562	0.001
Log pseudo-likelihood	-8200.95		-8194.24	
Pseudo-R^2	0.1362		0.1369	

The usual variables were also included in the regressions as controls; that is, income and expectation variables (absolute income, income aspirations, short and long term expectations, health status and participation), socio-demographic variables (age, age squared, gender, household type), and socio-economic variables (education and employment status). The omitted category for subjective social class is no poor/no rich.

We have computed measures of fit and have compared them between models to conclude that the 3rd specification is preferred to any of the two previous ones.